SESSION 4: BREAKOUT SESSION: BRIDGING THE GAP BETWEEN PREDICTABILITY AND CURRENT SKILL

Chair: **Kinter**

Rapporteur: **Tippett**

Focus Questions

1. What are the most important scientific questions that need to be answered to bridge the gap between current and potential skill for sub-seasonal timescales?
2. Without resource limits, how would you approach answering those questions?
3. How would a multi-model ensemble re-forecast contribute to answering those questions?
4. Within resource limits, what system improvements (e.g. horizontal resolution, stratospheric vertical resolution, ensemble size, initialization) are most likely to cost-effectively improve sub-seasonal skill?

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Summary of Talks So Far

- Predicting the predictors (role of bias?)
  - MJO
  - Sudden Stratospheric Warming
  - SST (ENSO)
  - Soil moisture and snow
  - Sea ice
- Predicting the impact of the predictors (role of bias?)
  - MJO → NAO, tornadoes & severe wx
  - SSW → NAO
    - May be better to just predict NAO – higher S/N; predictable component?
  - Soil moisture and veg. phenology → contribute to precip. and circulation forecast skill
  - Ocean eddies → A-PBL and O-PBL forecast skill

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- Modeling issues
  - Spatial resolution (and re-tuning methodology?)
  - Ocean-atmosphere coupling (eddy-resolving ocean?)
  - Lead-time dependent bias
  - Coupled DA and initialization (eddies too?)
  - Ensemble generation
  - Spread/skill relationship
  - Verification (flow dependence; precip., ensembles)
  - Benefit of MME
  - Reforecast ensemble size and length (quality of initial states)

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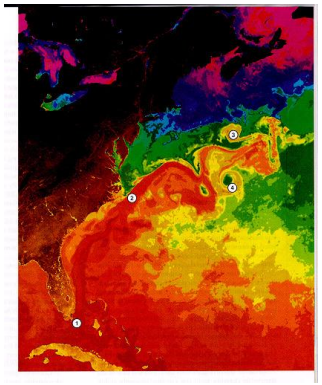
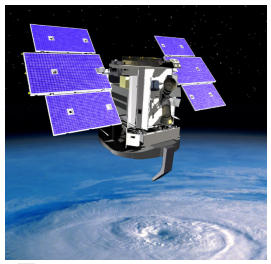
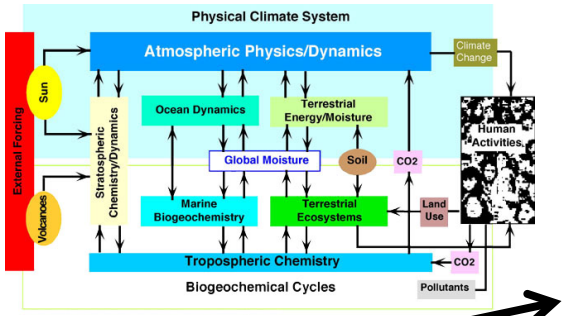
Balancing Demands on Resources





Data
Assimilation



Resolution

Data and HPC Resources

Complexity

Duration and/or Ensemble size